



## Introducing Theme 3: Choose to boost veggies and fruit.

This theme is about encouraging kids and families to make vegetables and fruit a part of every meal and snack. Veggies and fruit give kids the vitamins, minerals, and fibre that they need to stay healthy.

Reaching for vegetables and fruit throughout the day will help kids get at least 5 servings a day, which is the amount recommended by Canada's Food Guide. During Theme 3, Healthy Kids Community Challenge communities will be working to support kids eating more vegetables and fruit by:

- Increasing access and availability in the places where kids spend time.
- Improving kids' knowledge, skills and behaviours around healthy eating.

Communities will be doing this through campaigns, policies, programs and other supports.



## Why kids need to eat more vegetables and fruit

- Vegetables and fruit go hand in hand with healthy eating. Eating a diet rich in veggies and fruit:
  - ~ May prevent certain types of cancer<sup>1</sup>.
  - ~ Is linked to a lower risk of heart disease<sup>2</sup>.
  - ~ Is linked to healthy weights and lower risk of obesity<sup>3</sup>. The Canadian Community Health Survey found that children aged 2-17 who ate vegetables and fruit less than 5 times a day were much more likely to be overweight or obese than those who did so more often<sup>4</sup>.
- Eating vegetables and fruit provides more fibre than juice<sup>5</sup>. Fruit juice is not a better option. Even though it has more nutrients, it contains as much sugar (though from naturally occurring fruit sugars rather than added sugar) and calories as soft drinks<sup>6</sup>. Whole fruit is lower in sugar than juice<sup>7</sup>.
- When people eat more vegetables and fruit as part of a healthy diet, combined with physical activity, it reduces the cases of chronic disease<sup>8</sup>.
- The presence of neighbourhood supermarkets and farmers' markets and access to affordable vegetables and fruit<sup>9</sup> is linked to lower BMI (Body Mass Index) and healthier weight in kids<sup>10</sup>.

## Healthy behaviours: What do we want kids to eat?

Over the next several months, our Healthy Kids Community Challenge community will be working to encourage kids and families to reach for more vegetables and fruit. Canada's Food Guide recommends children aged 2-13 years old eat 4-6 servings of veggies and fruit each day. However, we know kids and adults often fall short of this goal.

Recommended Number of Food Guide Servings per Day <sup>11</sup>			
Age in Years	2-3	4-8	9-13
Number of Vegetable and Fruit Servings	4	5	6

## What's a serving?

People may understand that vegetables and fruit are a healthy choice. But many do not know what a serving looks like. Canada's Food Guide offers these examples of serving sizes for common vegetables and fruit<sup>12</sup>.

### One serving of vegetables can include:

- 125 mL (½ cup) or 1 ear of corn
- 125 mL (½ cup) or 4 florets of cauliflower or broccoli
- 125 mL (½ cup) or 1 large carrot
- 125 mL (½ cup) or 6 spears of asparagus
- 125 mL (½ cup) of cooked fresh, frozen or canned vegetables such as beans, carrots, okra, bitter melon, bok choy or squash
- 250 mL (1 cup) of raw leafy greens such as lettuce, kale, or spinach
- 125 mL (½ cup) of tomato, or tomato sauce

### One serving of fruit can include:

- 1 medium apple, orange, peach, pear or banana
- 20 cherries or grapes
- 125 mL (½ cup) of fresh or frozen berries, melon, mango or plantain



## Key Facts:

### Canada's Food Guide recommends that children:

1. Eat a mix of veggies and fruit each day. This means at least one dark green vegetable (broccoli, spinach, romaine lettuce) and one orange vegetable (carrots, sweet potatoes, winter squash).
2. Choose vegetables and fruit prepared with little or no added fat, sugar or salt. Veggies that are steamed, baked or stir-fried are best—not deep fried<sup>13</sup>.

### Studies show that most children are not meeting the goal of 5 servings of vegetables and fruit each day:

- The Canadian Community Health Survey (2.2) shows:
  - ~ 59% of Canadian children aged 2-17 had less than 5 servings a day of vegetables and fruit<sup>14</sup>.
  - ~ Among those aged 4-8, 7 out of 10 children did not meet this minimum.
  - ~ From ages 9 to 13, 62% of girls and 68% of boys do not meet the 5 serving guideline.
  - ~ These patterns continue into adulthood. Almost half of Canadian adults fall short of 5 servings of veggies and fruit a day<sup>15</sup>.
- Ontarians are eating fewer vegetables and fruit:
  - ~ 42% of those 12 and older ate at least 5 servings of vegetables and fruit in 2003. That number dropped to 38% in 2014<sup>16</sup>.
- A 2009/2010 survey looked at eating habits in school-aged children and youth across Canada. It suggests that fewer children are eating vegetables than fruit on a daily basis<sup>17</sup>.

In particular, kids need to eat more orange and green vegetables. Among Ontario children in grades 6-8:

- ~ 43% of boys and 53% of girls reported eating fruit once or more a day.
- ~ 41% of boys and 50% of girls reported consuming vegetables at least once a day.
- ~ 14% of boys and 18% of girls ate dark green vegetables at least once a day.
- ~ 16% of boys and 17% of girls ate orange vegetables at least once a day.
- ~ For students surveyed in grades 9 and 10, vegetable consumption was even lower across all categories. This suggests that kids tend to eat fewer vegetables as they get older.
- As children and adults, females are more likely to eat the recommended amount of vegetables and fruit than males<sup>18</sup>.
  - ~ In 2014, 47% of females over age 12 ate vegetables and fruit 5 or more times daily. 32% of males did so.
- In the 2007/2008 First Nations Regional Health Survey, parents/guardians of First Nations children reported that 58% of children (aged 2-11) “always” or “almost always” ate a nutritious balanced diet. About 4% of children very rarely or never ate a nutritious balanced diet. Specifically:
  - ~ 35% of children ate vegetables several times a day.
  - ~ 49% of children ate fruit (not including juice) several times a day<sup>19</sup>.
- As children enter adolescence, they are often less likely to meet recommended guidelines for vegetable and fruit servings<sup>20</sup>. This is why it is so important to build healthy habits in young children, as well as target older kids and youth.

## Supporting healthy behaviours: What factors help kids eat more vegetables and fruit?

### Early Exposure

- Food preferences are set early in a child's life. This means that families and childcare settings have a big role to play. Children who eat vegetables and fruit as toddlers are much more likely to do so later in childhood<sup>21</sup>.

### Role Modelling

- Children learn about food by watching others. Research shows that children are more likely to eat the recommended amounts of vegetables, fruit, and milk after they see adults eating these foods<sup>22</sup>.
- Watching other children's behaviour can also have a positive effect. In one study, preschoolers were more likely to choose and eat vegetables after seeing other kids do so<sup>23</sup>.

### Family Meals and Food at Home

- Children who help prepare meals at home also tend to eat more vegetables and fruit. These kids were also better at choosing and eating healthy foods for themselves<sup>24</sup>.
- Parental attitudes may also affect healthy eating in kids. For example, using food as a reward is linked to nutritional problems for children. But when parents offer support and verbal praise, kids are more likely to eat vegetables and fruit<sup>25</sup>.
- Recent research by Public Health Ontario (2016) shows that when Ontario parents serve raw vegetables and fruit as snacks to their children between meals, those children were almost 5 times more likely to meet recommended daily intake amounts<sup>26</sup>.
- Studies with Ontario parents show that when families eat meals together, away from the TV, children are 67% more likely to eat the recommended servings of vegetables and fruit<sup>27</sup>.

### School and Community Programs

- In Northern Ontario, kids in schools with nutrition programs that provide healthy meals and snacks eat more vegetables and fruit. These kids also improve their knowledge and attitudes around healthy eating<sup>28</sup>.
- A systematic review of 27 school-based programs showed improvement in consumption of primarily fruit vs. vegetables, suggesting that more emphasis may need to be put on promoting vegetables in these settings<sup>29</sup>.
- School garden and food preparation interventions have been shown to increase children's level of vegetable and fruit consumption<sup>30</sup>, as well as food literacy.
  - ~ One study showed that grade 2 students who participated in a nutrition and garden education group knew more about nutrition and rated food as tastier. They were also more likely to eat vegetables during their lunchtime than groups that received nutrition education only<sup>31</sup>.
  - ~ Youth in garden-based nutrition programs also tended to eat more vegetables and fruit. Younger children were also more willing to taste vegetables and fruit<sup>32</sup>.
- Programs that address many aspects of healthy eating work best. A review of school and community-based efforts to encourage kids to eat more vegetables and fruit<sup>33</sup> reported that interventions are most successful when they:
  - ~ Focus on helping kids eat more vegetables and fruit, instead of general nutrition;
  - ~ Involve kids in hands-on activities involving food preparation and tasting;
  - ~ Provide special training for teachers;
  - ~ Set up role models or peer leaders such as student leaders or fictional cartoon characters;
  - ~ Involve parents at school and home; and
  - ~ Put healthy nutrition policies in place.



### Childhood Overweight and Obesity

- Almost 30% of Ontario children are considered to have unhealthy weights<sup>34</sup>.
- Obesity in childhood carries a higher risk of chronic disease and premature death as adults<sup>35</sup>.
- Children and youth with excess weight are more likely to become obese adults. In one study, overweight 2-5 year olds were more than 4 times as likely to be overweight as adults<sup>36</sup>.
- Adults with obesity are more likely to have coronary artery disease, a stroke, high blood pressure, breast and colon cancer, type 2 diabetes, gall bladder disease and osteoarthritis<sup>37</sup>.
- Unhealthy weights can influence self-esteem, success socially and mental health in children and youth<sup>38</sup>.

**To learn more about the activities in our community or to get involved, contact your Healthy Kids Community Challenge project manager:**

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**Name**

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**Email**

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**Telephone**

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**Website**



Learn more about healthy eating for kids at [Ontario.ca/healthykids](http://Ontario.ca/healthykids)

## References:

- 1 World Cancer Research Fund and American Institute for Cancer Research. Food, nutrition, physical activity, and the prevention of cancer: a global perspective. Washington, DC: AIRC; 2007
- 2 Hung HC, Joshipura KJ, Jiang R, et al. Fruit and vegetable intake and risk of major chronic disease. J Natl Cancer Inst. 2004;96(21):1577-84
- 3 Hall JN, Moore S, Harper SB, Lynch JW. Global variability in fruit and vegetable consumption. Am J Prev Med. 2009;36(5):402-409, e5
- 4 Shields M. Nutrition: findings from the Canadian Community Health Survey. Measured obesity: overweight Canadian children and adolescents. Ottawa, ON: Statistics Canada; 2005
- 5 Health Canada. Tips for Fruit and Vegetables. <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/choose-choix/fruit/tips-trucs-eng.php>
- 6 Harvard School of Public Health. Sugary Drinks. <https://www.hsph.harvard.edu/nutritionsource/healthydrinks/sugary-drinks/>
- 7 Dietitians of Canada. 5 Steps to Healthy Eating for Toddlers Age 4-11. <http://www.dietitians.ca/Your-Health/Nutrition-A-Z/Toddlers/Healthy-Eating-for-Children-Aged-4-11.aspx>
- 8 World Health Organization. The World Health Report, reducing risks, promoting life. Geneva: WHO; 2002
- 9 Monasta L, Batty GD, Cattaneo A, Lutje V, Ronfani L, Van Lenthe FJ, et al. Early-life determinants of overweight and obesity: a review of systematic
- 10 Rahman T, Cushing RA, Jackson RJ. Contributions of built environment to childhood obesity. Mt Sinai J Med. 2011;78(1):49-57
- 11 Health Canada. Canada Food Guide. <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/basics-base/quantit-eng.php>
- 12 Health Canada. Eating Well with Canada's Food Guide – First Nations, Inuit and Métis. 2007. Found here: <http://www.hc-sc.gc.ca/fn-an/pubs/fnim-pnim/index-eng.php>
- 13 Health Canada. Vegetables and Fruit. <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/choose-choix/fruit/tips-trucs-eng.php>
- 14 Shields M. Nutrition: findings from the Canadian Community Health Survey. Measured obesity: overweight Canadian children and adolescents. Ottawa, ON: Statistics Canada; 2005. Retrieved from: <http://www.statcan.gc.ca/pub/82-620-m/2005001/c-g/child-enfant/4053588-eng.htm>

- 15 Garriguet D. Overview of Canadians' eating habits 2004. Statistics Canada Cat. No. 82-620-XIE. 2006
- 16 Statistics Canada. Table 105-0501 - Health indicator profile, annual estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, occasional, CANSIM (database)
- 17 Health and Health-Related Behaviours among Young People: ONTARIO. John Freeman, Matthew King, Rashed Al-Haque and Will Pickett. Social program Evaluation Group, Queen's University, Kingston, Canada
- 18 Statistics Canada. (2015). Health Fact Sheets – Fruit and vegetable consumption, 2014. Canadian Community Health Survey
- 19 First Nations Information Governance Centre (2012). First Nations Regional Health Survey 2008/10. Available from: [http://fnigc.ca/sites/default/files/docs/first\\_nations\\_regional\\_health\\_survey\\_rhs\\_2008-10\\_-\\_national\\_report.pdf](http://fnigc.ca/sites/default/files/docs/first_nations_regional_health_survey_rhs_2008-10_-_national_report.pdf)
- 20 Minaker L, Hammond D. Low Frequency of fruit and vegetable consumption among Canadian youth: findings from the 2012/2013 Youth Smoking Survey. *J Sch Health*. 2016; 86: 135-142
- 21 Kong et al 2016. Mid-childhood fruit and vegetable consumption: The roles of early liking, early consumption, and maternal consumption. *Appetite*. 2016 May 27;105:306-311
- 22 Birch LL. Effects of peer models' food choices and eating behaviors on preschoolers' food preference. *Child Development*. 1980;51:489-496
- 23 Christian MS, Evans CE, Hancock N, Nykjaer C, Cade JE. Family meals can help children reach their 5 A Day: A cross-sectional survey of children's dietary intake from London primary schools. *Journal of Epidemiology and Community Health* 2013;67(4):332-8
- 24 Chu YL, Farmer A, Fung C, Kuhle S, Storey KE, Veugelers PJ. Involvement in home meal preparation is associated with food preference and self-efficacy among Canadian children. *Public Health Nutr* 2013;16(1):108-12
- 25 Rosenkranz RR, Dzewaltowski DA. Model of the home food environment pertaining to childhood obesity. *Nutr Rev*. 2008;66(3):123-140
- 26 Pyper, E., Harrington, D., Manson, H. (2016). The impact of different types of parental support behaviours on child physical activity, healthy eating, and screen time: a cross-sectional study. *BMC Public Health*. 16:568
- 27 Pyper, E., Harrington, D., Manson, H. (2016). The impact of different types of parental support behaviours on child physical activity, healthy eating, and screen time: a cross-sectional study. *BMC Public Health*. 16:568
- 28 He M, Beyon C, Sangster Bouck M, St Onge R, Teward S, Khosaba L, et al. Impact evaluation of the Northern Fruit and Vegetable Pilot Programme – a cluster-randomized control trial. *Public Health Nutrition* 2009;12(11):2199-2208
- 29 Evans CE, Christian MS, Cleghorn CL, Greenwood DC, Cade JE. Systematic review and meta-analysis of school-based interventions to improve daily fruit and vegetable intake in children aged 5 to 12 y. *Am J Clin Nutr* 2012;96:889-901
- 30 Berezowitz, C. K., Bontrager Yoder, A. B. and Schoeller, D. A. (2015), School Gardens Enhance Academic Performance and Dietary Outcomes in Children. *Journal of School Health*, 85: 508–518
- 31 Parmer, S., Salisbury-Glennon, J., Shannon, D., & Struempler, B. (2009). School Gardens: An Experiential Learning Approach For A Nutrition Education Program To Increase Fruit And Vegetable Knowledge, Preference, And Consumption Among Second-grade Students. *Journal of Nutrition Education and Behavior*, 212-217
- 32 Robinson-O'Brien, R., Story, M. & Heim, S. (2009). Impact of garden-based youth nutrition intervention programs: A review. *Journal of the American Dietetic Association*, 109(2), 273-280
- 33 Knai C, Pomerleau J, Lock K, McKee M. Getting children to eat more fruit and vegetables: A systematic review. *Prev Med*. 2006 Feb; 42 (2): 85-95
- 34 Statistics Canada. (2004). Canadian Community Health Survey, 2.2
- 35 Reilly JJ, & Kelly J. (2011). Long-term impact of overweight and obesity in childhood and adolescence on morbidity and premature mortality in adulthood: Systematic review. *International Journal of Obesity*. 2011;35(7):891-8
- 36 Freedman DS, Khan LK, Serdula MK, Dietz WH, Srinivasan SR, & Berenson GS. (2005). The relation of childhood BMI to adult adiposity: The Bogalusa Heart Study. *Pediatrics*, 2005;115(1):22-27
- 37 Janssen I. (2013). The public health burden of obesity in Canada. *Canadian Journal of Diabetes*; 2013, 37:90-96
- 38 Strauss RS. (2000). Childhood obesity and self-esteem. *Pediatrics*, 2000;105(1):e15